

REMARKS

Claim Rejections

Claim 6 is rejected under 35 U.S.C. §112, second paragraph. Claims 6-8 are rejected under 35 U.S.C. §103 (a) as being unpatentable over Chang et al. (US 6,399,996 B1) in view of Wakatabe et al. (US 5,262,669).

Drawings

It is noted that the Examiner has accepted the drawings as originally filed with this application.

Claim Amendments

By this Amendment, Applicant has canceled claims 1-5, amended claim 6, and added claim 9 to this application. It is believed that the amended and new claims specifically set forth each element of Applicant's invention in full compliance with 35 U.S.C. § 112, and define subject matter that is patentably distinguishable over the cited prior art, taken individually or in combination.

The cited reference to Chang et al. teaches a Schottky diode. Chang et al. do not teach forming field oxide regions in the chip core region. When evaluating a chip, a chip core region designated as the entire chip region excludes the termination region. Even though Chang et al. includes the field oxide region (14), the resulting structure (final structure) only has a remnant field oxide region (14) surrounding of the chip. Therefore, the field oxide region (14) of Chang et al. corresponds to the termination region of the present invention.

The secondary reference to Wakatabe et al. teaches a semiconductor rectifier and is cited for teaching stripe trenches and rectangular trenches.

Since the p-type doped regions are formed first and then the field oxide region (140) and termination region (140A) are formed above the p-type doped region. The p-type doped regions (135) are formed beneath the field oxide region (140) and the termination region (140A) due to thermal diffusing drive in according the Present Invention. By contrast, in Chang et al. the p-type doped regions (22) is only a small portion formed beneath the field oxide region by lateral diffusion. Not

only does the present invention have a greater number of p-doped regions (135) than Chang et al., but also their positions are different. Please compare the FIG. 7 of the present invention with Fig. 9 of Chang et al.

The p-type doped regions (135) beneath the termination region are extended to the edge of the chip according to the present Application. However, in Chang et al., the p-type region (22) is only a small portion under the field oxide region and does not extend to surround the chip.

The Applicant submits that the difference between the present invention and Chang et al. are not as Examiner stated the trench shape (rectangular trench vs. strip trench) and the second mesa only but also the number of p-doped regions, and their related positions and number of field oxide regions (in Chang et al., the field oxide regions 14 are more like the termination region of the present Application) as forgoing remarks.

Applicant submits that there is not the slightest suggestion in either Chang et al. or Wakatabe et al. that their respective teachings may be combined as suggested by the Examiner. Absent any such teaching or suggestion in the prior art, such a combination cannot be made under 35 U.S.C. § 103.

Neither Chang et al. nor Wakatabe et al. disclose, or suggest a modification of their specifically disclosed structures that would lead one having ordinary skill in the art to arrive at Applicant's claimed structure. Applicant hereby respectfully submits that no combination of the cited prior art renders obvious Applicant's amended and new claims.

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Summary

In view of the foregoing amendments and remarks, Applicant submits that this application is now in condition for allowance and such action is respectfully requested. Should any points remain in issue, which the Examiner feels could best be resolved by either a personal or a telephone interview, it is urged that Applicant's local attorney be contacted at the exchange listed below.

Respectfully submitted,

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